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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/637,660

08/11/2003

Shinichi Takahashi

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EXAMINER

CHU, HELEN OK

ART UNIT

PAPER NUMBER

1745

MAIL DATE

DELIVERY MODE

05/01/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/637,660

Applicant(s)

TAKAHASHI, SHINICHI

Examiner

Helen O. Chu

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 09 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-31 is/are pending in the application.
- 4a) Of the above claim(s) 7-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. Applicant's Amendments have been received on February 9, 2007. Claim 1 has been amended.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1, 3-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation " a fuel cell stack comprising at least one unit cell having electrodes, and an anode and a cathode respectively connected to the electrodes of the unit cell" is unclear to the Examiner. Another way of putting it, the recitation can be interpreted as a fuel cell has electrodes and an anode and a cathode is connected to the fuel cell electrodes. In addition, the anode of the dc power supply is connected to the anode of the fuel cell. The Examiner is confused as to whether the Applicant want both anode of the dc power supply and the fuel cell to be connected in addition to an anode of a fuel cell and another anode of another fuel cell to be connected as well.
5. Claims depending from claims rejected under 35 U.S.C 112, second paragraph, are also rejected for the same reasons

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1,3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levy et al. (US Patent 4,839,247).

In regard to claims 1 and 4, the Levy reference discloses a fuel cell system can be used in place of rechargeable batteries (Column 1, Lines 21-26). The fuel and oxidant to the fuel cell stack of which the fuel cell is connected to the electrolysis cell stack (Abstract; Applicant's unit cell). During the electrolysis mode the substacks are connected in a parallel fashion. (Applicant's anode connection of the DC power supply and the fuel cell and the same with cathode to cathode; Column 5, Lines 27-36). During fuel cell mode, water is produced by the chemical reaction and the electrons leave the fuel cell from the anode from conduction elements (Figure 4, components 58 and 80) into a load in this case is the electrolysis cell. During the electrolysis mode, electrons are supplied to break up the water molecule into separate hydrogen and oxygen molecules. Though the DC supply is neither a battery nor a generator, the fuel cells act

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as a DC supply supplying electrons into the unit cell which is shown to be art-recognized equivalents at the time the invention was made.

In regards to claim 3, Levy et al. reference discloses a fuel cell having a pair of end plates (Figure 4, Component 55 and 73), a membrane electrode assembly which would have polymer electrolyte membrane and a diffusion layer (Figure 4, Component 18).

Regarding claims 5 and 6, the Levy et al. reference discloses motored vehicles but does not include automobiles as part of the disclosed invention. However, it would have been obvious to one of ordinary skill to incorporate the fuel cell system as disclosed by Levy et al. into an automobile because the most popular and highly owned motored vehicle is an automobile per household in the United States. One of ordinary skill must acknowledge that the sales of any invention are depended on demand which would motivate any business or company to obtain inventions. The demand for an automobile is higher than the demand for any other motored vehicles such as an airplane or a forklift.

8. Claims 1,3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (US Patent 6,926,982).

In regard to claim 1 and 4, the Levy reference discloses a fuel cell which circulates electrons when it is connected to an external load, thus, acting as a battery (Column 1, Lines 45-51). The Levy et al. reference discloses a fuel cell system capable of treating a regenerative current (Column 1, Lines 14-15) in which electrolysis is involved. Figure 1 illustrates the anodes and the cathodes of the fuel cell and

electrolysis are connected. The Levy et al. reference disclose that the power generation and the regeneration does not occur simultaneously so a detour may be absorbed for the time lag (Applicant's controller programmed to determine the fuel cell stack electricity generation and supply of current to the unit cell of the fuel cell stack from the DC power supply when generation of electricity by the fuel cell stack is terminated; Column 8, Lines 10-15). Though the DC supply is neither a battery nor a generator, the fuel cells act as a DC supply supplying electrons into the unit cell which is shown to be art-recognized equivalents at the time the invention was made.

In regards to claim 3, the Ito et al. reference discloses a fuel cell with interconnectors (Applicant's end plates; Figure 1, Component 1).

Regarding claims 5 and 6, the Ito et al. reference discloses motored vehicles but does not include automobiles as part of the disclosed invention. However, it would have been obvious to one of ordinary skill to incorporate the fuel cell system as disclosed by Ito et al. into an automobile because the most popular and highly owned motored vehicle is an automobile per household in the United States. One of ordinary skill must acknowledge that the sales of any invention are depended on demand which would motivate any business or company to obtain inventions. The demand for an automobile is higher than the demand for any other motored vehicles such as an airplane or a forklift.

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1, 3-6 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen O. Chu whose telephone number is (571) 272-5162. The examiner can normally be reached on Monday-Friday 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOC

  
TRACY DOVE  
PRIMARY EXAMINER